

21st Century Skills: Critical Thinking and Reasoning

Critical Thinking and Reasoning (Dance) – Dance is a discipline requiring that one create while thinking intensively and critically. The art form encourages students to define and solve artistic problems with insight, reason, and technical proficiency. The individual's curiosity teams with critical thinking to break boundaries, research, and enrich the imagination. The idea is to contribute something new to society, and find personal fulfillment.

Critical Thinking and Reasoning (Drama & Theatre)

As this century progresses, it becomes clear that the world needs citizens who are able to penetrate unfolding of events and conflicts with pure thought. The greatest exercise for the development of solid rationalization and logical solution has to do with problem-solving and critical response. Whether searching for strong or better choices in production or dramatic literature, or exploring the spontaneous ingenuity of improvisation, the mind is engaged in analytic and logical examination. Through script analysis, character analysis, design interpretations, or marketing planning, the theatre student develops practical thinking skills along with the ability to respond through writing, speaking, and logical expression. Equal to the ability to develop thought through observation and the identification of substantive ethic in plot, character, or style is the mindfulness of how one's choices affect others within the theatre group and from an audience's perspective. Once the mind is engaged through decision-making in writing, directing, acting, critiquing, using mathematics in design and construction, or simply attending a performance, the theatre student is developing abilities and skills that serve society to progress and evolve, to be flexible in solving cultural conflicts, and to celebrate the uniqueness of the individuality and the common bond in humanity.

Critical Thinking and Reasoning (Health & PE)

Health and physical education are disciplines grounded in critical thinking and reasoning. Developing and maintaining lifelong wellness habits involves decision-making and communication skills that sometimes can determine life-and-death outcomes. The skills and knowledge gained in health and physical education provide the structure that makes it possible to prevent risk behavior and adopt healthy lifestyles. Without good health and physical activity, critical thinking and reasoning are compromised.

Critical Thinking and Reasoning (Mathematics)

Mathematics is a discipline grounded in critical thinking and reasoning. Doing mathematics involves recognizing problematic aspects of situations, devising and carrying out strategies, evaluating the reasonableness of solutions, and justifying methods, strategies, and solutions. Mathematics provides the grammar and structure that make it possible to describe patterns that exist in nature and society.

Critical Thinking and Reasoning (Music) – When students demonstrate musical knowing, they are able to integrate varying perspectives when expressing themselves in a variety of ways, creating new musical works and analyzing musical works. Producing a quality musical performance requires a synthesis of creative, expressive, and technical skill; self-adjustment; listening; and adjustment of tone, pitch, and volume to create a balanced and effective sound. Music constantly challenges students to use multiple processes and diverse perspectives when performing, analyzing, or making informed decisions.

Critical Thinking and Reasoning (Reading, Writing and Communicating)

Critical thinking and reasoning are vital to advance in the technologically sophisticated world we live in. In order for students to be successful and powerful readers, writers, and communicators, they must incorporate critical thinking and reasoning skills. Students need to be able to successfully argue a point, justify reasoning, evaluate for a purpose, infer to predict and draw conclusions, problem-solve, and understand and use logic to inform critical thinking.

Critical Thinking and Reasoning (Science)

Science requires students to analyze evidence and draw conclusions based on that evidence. Scientific investigation involves defining problems and designing studies to test hypotheses related to those problems. In science, students must justify and defend scientific explanations and distinguish between correlation and causation.

Critical Thinking and Reasoning (Social Studies) – Social studies is a discipline grounded in critical thinking and reasoning. Doing history, geography, civics and economics involves recognizing patterns and relationships across time and space. Social studies provide the structure that makes it possible to describe patterns that exist in nature and society.

21st Century Skills-Information Literacy

Information Literacy (Dance) – The discipline of dance equips students with tools and the self-discipline to organize and interpret a multitude of resources. A dance student with information literacy skills can effectively analyze primary and secondary sources, detect bias, use learning tools that include technology, and clearly communicate thoughts using sound reasoning.

Information Literacy (Drama & Theatre)

Processing the awareness and demands of an ever-changing, modern world is more and more a function of an individual's ability to respond to what the world offers with one's foundation of knowledge, imagination, inventiveness, and attention to detail. The research required to master a faction of theatrical endeavor entreats the student to utilize all the sources available for study and to know the laws and limitations relevant to their audience, community, and culture. Theatrical production, as well as study in history and criticism, demands knowledge of customs, ideals, and technologies. Theatre students must use their knowledge from all other disciplines, including history, politics and social studies, mathematics and science, and media technology and mass communications in order to create and to understand their roles and created environments. These bodies of knowledge must be enhanced by skills and awareness in knowing where and how to find the information and how to discern its truth and relevance. What follows lies in knowing how to utilize the information in writing, characterization, directing, designing, and fashioning implements and environments. Theatre expresses the differences of time and cultures from all over the world and the spectrum of disciplines from all of history.

Information Literacy (Health & PE)

The disciplines of health and physical education equip students with the tools and habits of mind to organize and interpret a multitude of rapidly changing information resources. Students who are literate in health and physical education can analyze effectively primary and secondary sources, detect bias, use learning tools, including technology and media, and clearly communicate thoughts using sound reasoning.

Information Literacy (Mathematics)

The discipline of mathematics equips students with tools and habits of mind to organize and interpret quantitative data. Informationally literate mathematics students effectively use learning tools, including technology, and clearly communicate using mathematical language.

Information Literacy (Music) – Musical knowledge acquisition requires students to analyze scores, performances, genre, and style. Source discernment is vital in these endeavors because it allows students to interpret musical messages differently including points of view. When students research music using inquiry through critical listening, describing, and evaluating, they become educated consumers and aficionados.

Information Literacy (Reading, Writing and Communicating)

The student who is information-literate accesses information efficiently and effectively by reading and understanding essential content of a range of informational texts and documents in all academic areas. This involves evaluating information critically and competently; accessing appropriate tools to synthesize information; recognizing relevant primary and secondary information; and distinguishing among fact, point of view, and opinion.

Information Literacy (Science)

Understanding science requires students to research current ideas about the natural world. Students must be able to distinguish fact from opinion and truth from fantasy. Science requires a degree of skepticism because the ideas of science are subject to change. Science students must be able to understand what constitutes reliable sources of information and how to validate those sources. One key to science is understanding that converging different lines of evidence from multiple sources strengthens a scientific conclusion.

Collaboration (Dance) – Dance is about collaboration, cooperation, creative problem-solving, teamwork, excellence, and reflection. It encourages ensemble work and applauds success. Students of dance are involved with constructive interaction with others; display patience, fair play, and honesty; respect differences; and take turns and collaborate to strengthen the learning process.

Collaboration(Drama & Theatre)

The spirit of collaboration lives in the very heart of theatre study. Theatrical production includes a dynamic mix of all the arts – as visual art, music, dance, and literary works are all embraced to recreate stories of the human condition. The study of theatre arts is a group dynamic. To produce theatrical works requires an interaction of artists and technicians from many different disciplines. This interaction is inherently related to the interaction our young citizens will encounter in their roles as citizens. In preparation for a theatrical event, planning, staffing, and practicing are required of the entire company of actors, artisans, managers, designers, technicians, and marketing specialists. The result of this intense collaboration is an understanding and appreciation of leadership, talent, and reliability. A work of theatre for an audience is the reenactment of conflict and consequence in time and space as interpreted by the group in plot, characterization, and spectacle. This provides the essence of understanding and loving in a community bound together by language, custom, age, gender, history, race, or privilege.

Collaboration (Health & PE)

The health and physical education content areas directly involve students in teams, problem-solving groups, and community connections to support the overall health of the individual and the community. Students offer ideas, strategies, solutions, justifications, and proofs for others to evaluate. In turn, students use feedback to improve performance and interpret and evaluate the ideas, strategies, solutions, and justifications of others.

Collaboration(Mathematics)

Mathematics is a social discipline involving the exchange of ideas. In the course of doing mathematics, students offer ideas, strategies, solutions, justifications, and proofs for others to evaluate. In turn, the mathematics student interprets and evaluates the ideas, strategies, solutions, justifications and proofs of others.

Collaboration (Music) – Music education requires students to collaborate within a variety of instrumental and vocal ensembles. The synergy and discipline that musical ensembles foster create leadership skills and self-awareness. When students communicate the language of music to a variety of audiences through response to conductor's cues and interpretation, they demonstrate collective problem-solving skills that are readily transferred in all aspects of life.

Collaboration (Reading, Writing and Communicating)

Reading, writing, and communicating must encompass collaboration skills. Students should be able to collaborate with each other in multiple settings: peer groups, one-on-one, in front of an audience, in large and small group settings, and with people

of other ethnicities. Students should be able to participate in a peer review, foster a safe environment for discourse, mediate opposing perspectives, contribute ideas, speak with a purpose, understand and apply knowledge of culture, and seek others' ideas.

Collaboration(Science)

Science students must be able to listen to others' ideas, and engage in scientific dialogs that are based on evidence – not opinion. These types of conversations allow them to compare and evaluate the merit of different ideas. The peer review process helps to ensure the validity of scientific explanations.

21st Century Skills-Self Direction

Self-Direction (Dance) – Dance requires a productive disposition, self-discipline, initiative, curiosity, and dedication. This involves monitoring and assessing one's thinking and persisting in search of patterns, relationships, and cause and effect. Personal integrity helps students to learn to think beyond the immediate to see worthy objectives. Through dance, students connect with one another and come to appreciate rich and diverse cultures, beliefs, and societies.

Self Direction(Drama & Theatre)

The guiding lights for students of theatre are in learning the concepts of initiative and responsibility. Because of its collaborative nature and that a task must be completed on time and out of one's own initiative, theatre production is an invaluable tool for developing the personality and sense of community responsibility. Each individual finds an important place to contribute to the whole of the project, and each one learns to express himself or herself to their best sense of excellence for the good of the entire company. For personal growth, theatre equips the participant with the communication skills and the ego strength to make mature choices and evaluations. As theatre students progress from learner to leader, they have the opportunity find their gifts and individual talents. Theater students learn to rely on themselves and to trust the response of their community of artists and their audiences. To stand in the midst of fellow students, teachers, and administrators, or face an audience and deliver the fruits of their labor and study is the most internally strengthening human activity. Students of theatre can rely on this strength for self-expression and self direction, and those qualities stay with them for the rest of their lives.

Self-Direction (Health & PE)

Understanding and participating in health and physical education requires a productive disposition, curiosity, personal motivation, and self-direction. Health and physical education are more than passive learning. Individual active participation, practice, and competence are underlying principles of these content areas.

Self-Direction (Mathematics)

Doing mathematics requires a productive disposition and self-direction. It involves monitoring and assessing one's mathematical thinking and persistence in searching for patterns, relationships, and sensible solutions.

Self Direction (Reading, Writing, and Communicating)

Students who read, write, and communicate independently portray self-direction by using metacognition skills. These important skills are a learner's automatic awareness of knowledge and ability to understand, control, and manipulate cognitive processes. These skills are important not only in school but throughout life, enabling the student to learn and set goals independently.

Self-Direction (Science)

Students in science must have persistence and perseverance when exploring scientific concepts. Students must generate their own questions, and design investigations to find the answers. Students must be open to revising and redefining their thinking based on evidence.

Self-Direction(World Language) – Self-directed students continuously self-monitor and seek more challenging ways to meet the goals they have set for themselves, and work with increasing independence as they explore and compare their own experiences and perspectives with those of people in other countries and communities. They initiate and create multicultural and multilinguistic paths to understanding and are able to define, prioritize, and complete tasks without direct oversight.

21st Century Skills-Invention

Invention (Dance) – Dance is continually changing and reinventing itself. It is the physical expression of an idea. "The arts are among the resources through which individuals re-create themselves. The work of art is a process that culminates in a new art form. That art form is the recreation of the individual. Recreation is a form of re-creation. The arts are among the most powerful means of promoting recreation." (Elliott Eisner 2002)

Invention(Drama & Theatre)

Exercising the creativity and inventiveness of the human soul begins at the very first stages of theatre study and continues beyond the high school years. The actor learns to take risks in characterization and spontaneity; the writer learns to explore all possibilities of development; and the technician learns to solve all sorts of problems in nonverbal forms. Each time a theatrical production is undertaken, it is a new invention, no matter if that title has been done before or if it is an original work. The solutions to that particular production concept are inventions created to serve the performance; the particular invention may live only in the time and place for which it is created, or it may be discarded after performance – but the inventiveness and appreciation for those solutions will live on in the individual and group –each time an actor, out of technique or spontaneity, creates a personal event or interpretation, or each time an artisan creates a working piece of scenery, sound effect, implement, or environmental effect, or each time a publicist finds a new incentive for a greater audience, an invention has come to life. The appreciation of new inventions also has a place in theatre study, as the discerning theatre group always embraces the newest technologies and latest developments in theory. The skill developed in the creation of the moment, implement, or method will

serve the theatre student through many years to come.

Invention (Health & PE)

The health and physical education disciplines are a dynamic set of content area disciplines, ever expanding with new research, ideas, and understandings. Invention is the key element of the expansion as students make and test theories and skills, create and use tools, search for patterns and themes, and make connections among ideas, strategies, and solutions.

Invention (Music) – The diversity in musical style, form, and genre would not exist without the underlying promise of innovation and the possibilities of creating something new. Students integrate ideas to create original works through personal or group expression. They construct knowledge and challenge choices when arranging, orchestrating, improvising, and using technology to develop musical compositions.

Invention (Mathematics)

Mathematics is a dynamic discipline, ever expanding as new ideas are contributed. Invention is the key element as students make and test conjectures, create mathematical models of real-world phenomena, generalize results, and make connections among ideas, strategies and solutions.

Invention (Reading, Writing, and Communicating)

Applying new ways to solve problems is an ideal in reading and writing instruction. Invention is one of the key components of creating an exemplary writing piece or synthesizing information from multiple sources. Invention takes students to a higher level of metacognition while exploring literature and writing about their experiences.

Invention (Science)

Designing investigations and engineering new products involves a large degree of invention. Scientists and engineers often have to think “outside the box” as they push the limits of our current knowledge. They must learn from their failures to take the next steps in understanding. Science students also must integrate ideas from multiple disciplines to formulate an understanding of the natural world. In addition to using invention to design investigations, scientists also use findings from investigations to help them to invent new products.

Information Literacy (Social Studies) – The disciplines of social studies equip students with tools and mental habits to organize and interpret a multitude of resources. A social studies student with information literacy skills can effectively analyze primary and secondary sources, detect bias, use learning tools, including technology, and clearly communicate thoughts using sound reasoning.

Collaboration (Social Studies) – The content areas of social studies involve the give and take of ideas. In the course of understanding social studies, students offer ideas, strategies, solutions, justifications, and proofs for others to evaluate. In turn, the student interprets and evaluates the ideas, strategies, solutions, and justifications of others.

Self-Direction (Social Studies) – Understanding social studies requires a productive disposition, curiosity and self-direction. This involves monitoring and assessing one's thinking and persisting to search for patterns, relationships, cause and effect, and an understanding of the events and people throughout time.

Invention (Social Studies) – The social studies are a dynamic set of content area disciplines, ever expanding with new ideas and understandings. Invention is the key element as students make and test theories, create and use social studies tools, search for patterns and themes, and make connections among ideas, strategies and solutions.

21st Century Skills – Visual Arts

Critical Thinking and Reasoning (Visual Arts)

The visual arts help us to make associations and connections through deductive and inductive reasoning allowing for higher-order questioning, problem-posing, and problem-solving. These skills nurture competencies in creating, writing about, and critiquing works of art as well as internalizing, processing, and responding to art work. The nature of art allows for active investigative thinking involving taking risks and implementing multiple perspectives to arrive at solutions. These skills also facilitate analysis and the context of self-critique so that we may reflect on and interact with the attributes of unbiased and objective realizations. A work of art is a process of designing and creating which incorporates personal, historical and cultural traditions that convey meaning.

Information Literacy (Visual Arts)

The language of visual arts is our primary language. It is the primary source of human communication and has existed since the dawn of time as a way to connect us to the world we live in. The visual arts provide networks in and through other forms of communication, subject areas, and disciplines and help us to construct meaning and become better informed producers, consumers, and evaluators. Through the visual arts, we develop observation and translation skills that transform ideas into images, allowing us to make the judgments and decisions required of inquiry-based contexts so that we can connect to and understand the global literacies of our human existence. Designing and creating in the visual arts necessitates the organization of the varied literacies by which our humanity is guided. Our meaning making is made whole through interaction with the multiple resources and venues (including and not limited to those in the digital domain) that we use to search for solutions as we consider visual and conceptual problems. This paradigm base brings purpose and intent to the creative process, promoting a sense of individual, personal, and cultural history within our lifelong learning experiences.

Collaboration (Visual Arts)

The visual arts promote a collaborative domain where engagement is motivated by purpose-driven activities that seek understanding of other cultures in an inclusive, cross-curricular environment. These exchanges are based on inspiration and problem-solving and are structured to build capacity, leadership, delegation, and organization skills that respect many perspectives where all voices, opinions, and ideas are equally heard and respected in the experience. The collaborative nature of these settings is about working together toward a common goal, project, or experience that is focused on joint outcomes and improved communication skills and puts the ego aside to champion community conventions with tact and thoughtfulness. In the visual arts domain, teamwork is valued, as it is imperative to the integrative nature of conflict resolution and successful cooperative spirit.

Self-Direction (Visual Arts)

Patience, perseverance, and self-discipline provide the focus and intrinsic motivation required of the visual arts. To create a work of art, the artist must have the courage and vision to explore new possibilities and be self-directed enough to own the journey of self discovery, set personal goals along the way, and act on those goals. The artist also must have the confidence to create, express ideas, and reflect on the choices and directions made in the process. In the visual arts, a sense of identity and pride in one's work is required in order to analyze and self-critique, use pre- and post- measurements of growth and change (assessments), and understand the unique intuitive behaviors and decisions involved in art-making without a fear of failure, because it is through our failures that we learn the most about ourselves and about the works of art we create.

Invention (Visual Arts)

Epiphany can best describe the notion of invention as it speaks to that significant moment that defines the "Aha!" experience in the act of creation. Making art is the patient and dedicated quest for originality through exploration, experimentation, risk-taking, and problem-solving. This process involves a commitment to openness, creative thought, and vision where the deconstruction, re-purposing, and synchronicity of ideas generate personal revelations that inspire divergent thinking and embellish the multiple pathways we use to redefine and expand our uniqueness. The individual nature of what we create and invent involves and necessitates a firm devotion to persistence, garnished with intense levels of perspiration and seasoned with various quantities of trial and error. These elements express the determination involved in the act of invention.

Critical Thinking and Reasoning (World Language) – Students who use critical thinking and reasoning skills are able to analyze, evaluate, and synthesize diverse, multicultural perspectives. By using their existing knowledge of language in imaginative ways, students communicate their ideas and opinions to audiences within the classroom and beyond, while exploring alternative solutions for solving different kinds of unfamiliar problems.

Information Literacy (World Language) – Information literacy involves students using appropriate technology as a tool to select, research, organize, evaluate, and communicate information for diverse, multicultural, and multilingual environments. Students should be able to use digital media to learn, communicate, and work collaboratively, and to support their learning and the learning of others on local, national, and global levels.

Collaboration (World Language) __– Students can use collaborative skills to communicate effectively through modern technologies to extend their language experience and improve their understanding of different cultures. The ability to learn from and work cooperatively with global team members ranging in social, linguistic, and multicultural backgrounds is a critical skill toward the necessary compromises to accomplish for common goals in an interdependent world.

Invention (World Language) __– Students apply existing knowledge of language and culture to generate and implement new ideas, products, and processes, while respecting diverse cultural perspectives. They also may initiate projects and create original works as a means of personal or group expression using the target language.